How Much Is Dirt Worth?

Hitting Pay Dirt

Background

Agriculture is the nation’s largest employer. Roughly 20 out of 100 people rely on farms and farming for their livelihood. The United States exports more farm products than any other country in the world. It costs the farmer more to produce good crops on poor soil and this cost is passed on to the consumer—you—in higher prices at the grocery store.

Look at the money that can be earned by our productive soils. Soils produce our food, keeping us alive. How do we place a value on human life? Food production or agriculture employs 20 out of every 100 people in the United States. Agricultural exports are translated into billions of dollars for United States trade. The soils on this planet are essential to our survival! Good soils are a limited resource and because it takes an average of 100 to 500 years to make 1 inch of topsoil, soil is considered a nonrenewable resource. It is difficult to place a value on our soils, so the best thing to do is conserve what we have. Soil loss (erosion) affects our country’s economics and our lives. Famine and economic depression can result from the loss of top soil.

In the U.S., about two billion tons of topsoil is lost each year, including some of our most productive soils. We have slowed erosion over the past 30 years, but we are still losing some of our topsoil each year. Fertile topsoil is what gives us the highest yields of food per acre. What will we do when our topsoil is gone? Farm the subsoil and get lower yields? That’s a possibility, but that is why agricultural scientists are working hard to find out how we can sustainably grow and produce food. This area of agricultural research is called sustainable agriculture. Sustainable agriculture involves studying methods and practices to keep topsoil in its place, increase soil fertility, and use lower energy inputs to produce our food. Soil is important economically and for our very survival!

Some good news, half a ton of topsoil is made each year. Topsoil loss is greater than our gain, but farmers buy time with conservation methods. We still lose topsoil, just at a slower rate. The goal of farmers and researchers is to find methods whereby we lose no more topsoil than what is made. Sustainable practices such as adding compost, managing cover crops, and no-till (tilage) farming are methods currently being used and studied to save our topsoil.

How can we put a value on soil or land? To do so would be kind of like placing a value on human life—it is simply invaluable.

Activity Procedures

Activity 1: Slicing Up Earth’s Land Resources

1. The following instructions use an apple to demonstrate the distribution of Earth’s resources. As the instructor, you will perform the demonstration and students will fill in their pie chart as you list what each slice represents.
2. Cut the apple into four equal wedges. These quarters represent the oceans that occupy 3/4 of our earth.
3. The remaining quarter of our earth is our land area. Take this quarter and
Vocabulary

strip cropping: planting crops in strips, several rows, alternating with other crops that have a different root type; fibrous roots hold the soil better than crops with tap roots

cover crops: land that is planted with a fibrous root crop (like clover, various grasses, vetch, etc.) that will hold soil and is usually a legume that will add nitrogen to the soil

cut it in half. Now you have two 1/8 sections.

4. One eighth of our land is not suitable for producing food, these are the deserts, swamps, mountains, and the Arctic and Antarctic regions.

5. The other eighth represents land where people can live. Slice this 1/8th section lengthwise into four equal parts. Now you have four 1/32 pieces of an apple.

6. The first section represents the areas of the world which have rocky soil that is too poor for any type of food production.

7. The next two sections represents land that is too wet or too hot for food production.

8. The fourth section represents the area of the world developed by man.

9. Carefully remove the peel of the last 1/32nd section. This small bit of peel represents all the soil of our earth upon which humans depend upon for food production.

10. Activity 2: Cost versus Value

1. After reading the background material, demonstrate the following problem and scenario on the board: Let’s say you have 1 acre of land and 7 inches of topsoil. If every inch is worth $10.00 (working with round numbers make the math a bit easier) your topsoil would be worth $70.00.

2. Because of erosion you lose 1/2 an inch of topsoil each year. How much in dollars would you be losing each year? ($5.00 of topsoil from an acre).

3. What is your topsoil now worth? ($65.00)

4. Discuss what other losses would occur. (Because of lost topsoil, crops will not be as productive and your income will go down. You’ve lost topsoil and money!)

5. At your current rate of topsoil loss, how many years will go by before all 7 inches of topsoil are gone? (14 years)

6. Discuss the following questions:
   • Since soils provide our food, how is it we can place a value on them?
   • What is an acre of pristine farmland worth?
   • How do we decide what to pay for an acre of land?
   • What can you do to minimize the loss of topsoil?